

CLAIMS

What is claimed is:

1. A method comprising:
adding an effective amount of a recovery composition comprising a fatty acid alkyl ester, at least one of a surfactant and a colloid, and an acid to an oil reservoir; and
removing oil from the oil reservoir.
2. The method of claim 1, wherein adding comprises adding between about 300 gallons and about 3,000 gallons per well of the recovery composition and the fatty acid alkyl ester comprises a plant derived fatty acid methyl ester to the oil reservoir.
3. The method of claim 1,
wherein a concentration of the fatty acid alkyl ester is between about 85 percent and about 99.89 percent;
wherein a concentration of the surfactant is between about 0.1 percent and about 10 percent; and
wherein a concentration of the acid is between about 0.01 percent and about 5 percent.
4. The method of claim 1,
wherein adding comprises adding the effective amount of the recovery composition to the oil reservoir via a production well casing; and
further comprising, prior to removing oil from the reservoir, waiting a period of time between about 1 day and about 7 days.

5. The method of claim 1, wherein the composition comprises at least 1 percent of a colloid.

6. The method of claim 5, further comprising adding steam via the production well tubing after adding the recovery composition.

7. The method of claim 1, wherein adding comprises adding the effective amount of the recovery composition to the oil reservoir via a steam line.

8. The method of claim 7, further comprising adding steam via the steam line after adding the recovery composition.

9. A method for stimulating an oil reservoir comprising:
shutting down a production well;
adding an effective amount of a recovery composition comprising a fatty acid alkyl ester, at least one of a surfactant and a colloid, and an acid to the oil reservoir via the production well casing after shutting down the production well; and

adding an effective amount of steam to the oil reservoir via the production well casing after adding the recovery composition.

10. The method of claim 9, wherein adding comprises adding between about 300 gallons and about 3,000 gallons per well of a composition comprising a vegetable derived fatty acid methyl ester to the oil reservoir.

11. The method of claim 9, wherein adding an effective amount of steam to the oil reservoir comprises adding steam in an amount effective to thermally stimulate oil in the reservoir over a period of time between about one day and about sixty days.

12. The method of claim 9, wherein adding the recovery composition comprises adding a composition containing at least about 1 percent of a colloid, the colloid containing solid particles dispersed in a liquid, the solid particles sufficiently small that they do not settle out due to gravity.

13. The method of claim 9, wherein adding the recovery composition comprises adding an effective amount of a recovery composition comprising at least about 0.1 percent surfactant, at least about 0.01 percent weak acid to the oil reservoir.

14. The method of claim 13,
wherein a concentration of the fatty acid alkyl ester is between about 85 percent and about 99.89 percent;
wherein a concentration of the surfactant is between about 0.1 percent and about 10 percent; and
wherein a concentration of the acid is between about 0.01 percent and about 5 percent.

15. The method of claim 9, further comprising:
stopping addition of steam; and
recovering oil from the oil reservoir after stopping the addition of steam.

16. A method for stimulating an oil reservoir comprising:

shutting down a steam line;

adding an effective amount of a recovery composition containing a fatty acid alkyl ester and a colloid to the oil reservoir via the steam line after shutting down the steam line; and

adding an effective amount of steam to the oil reservoir via the steam line casing after adding the recovery composition.

17. The method of claim 16, wherein adding comprises adding between about 300 gallons and about 3,000 gallons per well of a composition comprising a vegetable derived fatty acid methyl ester to the oil reservoir.

18. The method of claim 16, wherein adding an effective amount of steam to the oil reservoir comprises adding steam in an amount effective to thermally stimulate the reservoir over a period of time between about one day and about sixty days.

19. The method of claim 16, wherein adding the recovery composition comprises adding a composition comprising a surfactant and an acid.

20. The method of claim 19, wherein adding the recovery composition comprises adding a composition comprising at least about 0.1 percent surfactant, at least about 0.01 percent acid, at least about 1 percent colloid, and at least about 85 percent fatty acid alkyl ester.

21. The method of claim 19,
wherein a concentration of the fatty acid alkyl ester is between about 75 percent and about 98.89 percent;

wherein a concentration of the colloid is between about 5 percent and about 16 percent;

wherein a concentration of the surfactant is between about 0.1 percent and about 10 percent; and

wherein a concentration of the acid is between about 0.01 percent and about 5 percent.

22. The method of claim 16, further comprising removing oil from the oil reservoir concurrently with said adding said effective amount of steam.

23. A composition comprising:
a fatty acid alkyl ester;
at least one of a surfactant and a colloid; and
an acid.

24. The composition of claim 23, wherein the concentration of the fatty acid alkyl ester is between about 85 percent and about 99.89 percent;

wherein the concentration of the surfactant is between about 0.1 percent and about 10 percent; and

wherein the concentration of the acid is between about 0.01 percent and about 5 percent.

25. The composition of claim 24,

wherein the concentration of the fatty acid alkyl ester is between about 94 percent and about 98.99 percent;

wherein the concentration of the surfactant is between about 1 percent and about 5 percent; and

wherein the concentration of the acid is between about 0.01 percent and about 1 percent.

26. The composition of claim 25, wherein the fatty acid alkyl ester comprises an ester selected from the group consisting of: a soy methyl ester, a soy ethyl ester, and soy propyl ester.

27. The composition of claim 23:

wherein the fatty acid alkyl ester is an ester derived from a vegetable triglyceride;

wherein the surfactant comprises F-500 surfactant; and

wherein the acid is selected from the group consisting of: a carboxylic acid, acetic acid, formic acid, citric acid, carboxylic acid, butyric acid, benzoic acid, carbonic acid, an aqueous solution of an acid, vinegar, and a mineral acid.

28. The composition of claim 23, wherein the fatty acid alkyl ester comprises a mixture of sixteen carbon chain length methyl esters, seventeen carbon chain length methyl esters, and eighteen carbon chain length methyl esters.

29. The composition of claim 28, wherein the mixture comprises linoleic acid, oleic acid, stearic acid, and palmitic acid.